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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,327	05/09/2005	Stefano Ambrosius Klinke	3717483.00031	4925

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EXAMINER
SAINT CYR, LEONARD

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
08/31/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 May 2010</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>7,9 and 11</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>7,9 and 11</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>05/09/05</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

05/20/10 has been entered.

Response to Arguments

2.   Applicant's arguments with respect to claims 7, 9, and 11 have been considered

but are moot in view of the new ground(s) of rejection.

        Applicant argues that neither Malah nor Gao et al., teach or suggest that a

reference table includes data relating to an amount of energy in a synthesized

frequency band and of a spectral structure of the synthesized frequency band, and

wherein the spectral structure of the synthesized frequency band takes account of a

probability of occurrence of artifacts at specific frequencies in the narrowband speech

signal (Amendment, page 4).

Claim Rejections - 35 USC § 103

3.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

4.   Claims 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Malah (US PAP 2003/0093278) in view of Gao et al., (US Patent 6,574,593); and further

in view of Udaya Bhaskar et al., (US Patent 6,691,092).

        As per claim 7, Malah teaches a communication device, comprising:

         a bandwidth expansion device for expanding a bandwidth of a narrowband

speech signal ("extending the bandwidth of a narrowband signal") at its low-frequency

and/or high-frequency end ("high band region...lower band") by synthesis of at least one

frequency band contained within said narrowband speech signal ("synthesizing a

highband signal from the narrowband speech" paragraphs 10, 30, and 8, first four lines).

        However, Malah does not specifically teach a memory unit, communicatively

coupled to said bandwidth expansion device, wherein said memory device stores a

reference table that includes at least one parameter value used for the bandwidth

expansion for at least two net bit rates of the narrowband speech signal; the reference

table includes data relating to an amount of energy in a synthesized frequency band

and of a spectral structure of the synthesized frequency band; the spectral structure of

the synthesized frequency band takes account of a probability of occurrence of artifacts

at specific frequencies in the narrowband speech.

Gao et al., teach that bandwidth expansion provides additional robustness against signal and round-off errors during subsequent encoding. According to rate selection, the bit-stream may be decoded to generate the post-processed synthesized speech. The decoders 90, and 92 perform inverse mapping of the components of the **bit-stream to algorithm parameters**. The inverse mapping may be followed by a type classification dependent synthesis within **the full and half-rate codecs 22, and 24**. Adaptive gain control module brings the energy level of the synthesized speech…parameters…may be adapted according to the rate selection and the long-term spectral characteristic determined by the characterization module (col.31, lines 64 – 67; col.56, lines 20 – 26; col.58, lines 13 – 17, and 43 – 45; performing **inverse mapping** to algorithm **parameters** implies a reference table stored in a memory that includes at least one parameter value for the bandwidth expansion for at least two net bit rates of the narrowband speech signal, **since the inverse mapping of parameters is done based on a selected rate**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use inverse mapping of the components of the bit-stream as taught by Gao et al., in view of Malah, because that would provide high quality decompressed speech (col.4, lines 23 - 25).

However, Gao et al., in view of Malah do not specifically teach that the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

Udaya Bhaskar et al., teach that Adaptive bandwidth broadening is employed for post-processing inactive speech frames to mitigate annoying artifacts due to spurious spectral peaks by (1) computing a measure of VAD likelihood by summing the VAD flags for the preceding, the current and the next two frames (which are available due to the 2 frame look-ahead employed at the encoder), and (2) using the VAD likelihood measure and voicing measure to determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify the provability of artifacts as taught by Udaya Bhaskar et al., in Gao et al., in view of Malah, because that would help determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

As per claim 9, Malah teaches a method for expanding a bandwidth of a narrowband speech signal for a communication terminal, comprising:

detecting a net bit rate of the narrowband speech signal of the communication terminal ("the decoded output from a **low bit-rate** speech coder"; paragraph 179);

expanding the bandwidth by means of a bandwidth expansion device on the basis of the parameters determined for a current bit rate ("obtaining parameters that represent the wideband spectral envelope from the narrowband spectral representation...parametric bandwidth extension systems"; paragraph 73, lines 1 – 6; paragraphs 67, and 117).

However, Malah does not specifically teach accessing a memory that includes a reference table which includes associations between at least two net bit rates and parameter values used for bandwidth expansion, in order to determine the at least one parameter value which is suitable for the detected net bit rate; the reference table includes data relating to an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band; the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

Gao et al., teach that bandwidth expansion provides additional robustness against signal and round-off errors during subsequent encoding. According to rate selection, the bit-stream may be decoded to generate the post-processed synthesized speech. The decoders 90, and 92 perform inverse mapping of the components of the **bit-stream to algorithm parameters**. The inverse mapping may be followed by a type classification dependent synthesis within **the full and half-rate** codecs 22, and 24. Adaptive gain control module brings the energy level of the synthesized speech…parameters…may be adapted according to the rate selection and the long-term spectral characteristic determined by the characterization module (col.31, lines 64 – 67; col.56, lines 20 – 26; col.58, lines 13 – 17, and 43 – 45; performing **inverse mapping** to algorithm **parameters** implies a reference table stored in a memory that includes at least one parameter value for the bandwidth expansion for at least two net bit rates of the narrowband speech signal, **since the inverse mapping of parameters is done based on a selected rate**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use inverse mapping of the components of the bit-stream as taught by Gao et al., in view of Malah, because that would provide high quality decompressed speech (col.4, lines 23 - 25).

However, Gao et al., in view of Malah do not specifically teach that the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

Udaya Bhaskar et al., teach that Adaptive bandwidth broadening is employed for post-processing inactive speech frames to mitigate annoying artifacts due to spurious spectral peaks by (1) computing a measure of VAD likelihood by summing the VAD flags for the preceding, the current and the next two frames (which are available due to the 2 frame look-ahead employed at the encoder), and (2) using the VAD likelihood measure and voicing measure to determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify the provability of artifacts as taught by Udaya Bhaskar et al., in Gao et al., in view of Malah, because that would help determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (col.12, lines 35 -50).

5.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Malah (US PAP 2003/0093278) in view of Gao et al., (US Patent 6,574,593), further in view of

Udaya Bhaskar et al., (US Patent 6,691,092); and further in view Van Der Vleuten (US Parent 6,498,811).

As per claim 11, Malah in view of Gao et al., further in view of Udaya Bhaskar et al., do not specifically disclose the energy of the synthesized frequency band decreases as the net bit rate decreases.

Van Der Vleuten teaches that the bit rate of the lossless encoded residue signal will decrease, accordingly, as the energy content of the second residue signal decreases (col.4, lines 33 – 36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the bit rate to be proportional to the energy as taught by Van Der Vleuten in Malah in view of Gao et al., in view of Udaya Bhaskar et al., because that would reduce the bit rate of a digital information signal more efficiently (col.1, lines 45 – 47).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD SAINT CYR whose telephone number is (571)272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 2727602. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leonard Saint-Cyr/

Examiner, Art Unit 2626